

Claims

1. Method to determine the thickness of a coating on a ferro-magnetic substrate using a device having a magnetic sensor element and a coil, the method comprising the steps:
 - measuring the output voltage of a magnetic sensor element generated by an external magnetic field;
 - generating a magnetic field by applying a current to the coil and measuring the output voltage of the magnetic sensor element;
 - the voltage measured in the first step is subtracted from the voltage measured in the second step;
 - the difference is used to determine the coating thickness.
2. Method to determine the thickness of a coating on a ferro-magnetic substrate using a device having a magnetic sensor element and a coil, the method comprising the steps:
 - a magnetic field B_1 , generated by the current I_1 in the coil, generates an output voltage U_1 in the magnetic sensor element, the output voltage depending on the distance of the magnetic sensor element from the substrate and on external magnetic fields;
 - the control unit determines the output voltage U_1 of the magnetic sensor element generated in the first step;
 - a second current I_2 through the coil and the resulting magnetic field B_2 generates a second output voltage U_2 ;
 - the control unit determines the output voltage U_2 of the magnetic sensor element generated in the third step;
 - the evaluation unit determines the coating thickness from the difference of the two output voltages.
3. The method of claim 2, wherein the current I_1 has the same absolute value as I_2 , but is of opposite polarity.

4. The method of claim 2, wherein the steps one through four are repeated several times.
5. The method of claim 1 or 2, wherein the magnetic sensor element is a Hall-sensor element.
6. The method of claim 1 or 2, wherein the magnetic sensor element is a GMR-sensor element.
7. Method to compensate the temperature dependence of the signal in a measuring device for coating thickness using a magnetic sensor element as measuring device, wherein the resistance of the magnetic sensor element is determined to receive a temperature signal which is used, together with the temperature coefficients of the magnetic sensor element, to determine a factor to correct the output voltage so that the corrected value of the output voltage is related to a reference temperature.
8. Method of claim 7, wherein the correction of the signal voltage is done by adjusting the current through the resistance of the magnetic sensor element.
9. The method of claim 7, wherein the correction of the measured output voltage is performed by calculation.
10. The method of claim 1, wherein the measurement of the output voltage is corrected with the method of any one of claims 7, 8 or 9.
11. The method of claim 2, wherein the measurement of the output voltage is corrected with the method of any one of claims 7, 8 or 9.
12. The method of claim 7, wherein the magnetic sensor is a Hall-sensor element.
13. The method of claim 7, wherein the magnetic sensor is a GMR-sensor element.